

**REMARKS/ARGUMENTS**

The Applicants thank the Examiner for his acknowledgement that Claims 13 - 18 are directed toward allowable subject matter.

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**Claim Rejections – 35 USC 101***Claims 1-10 and 19*

In Section 5 of the Office Action, the Examiner rejected Claims 1-10 and 19 under 35 U.S.C. 101, asserting that the claimed invention is directed toward non-statutory  
10 subject matter. Specifically, the Examiner stated that Claims 1-10 and 19 represent abstract methodology and therefore, are intangible.

The Applicants acknowledge the Examiner's assertion that the practical application test requires that a useful, concrete and tangible result be accomplished. Claim 1, claims in part "An improved method for generating an on-line fuzzy inference  
15 network for the classification of data ... the improvement comprising: ... in the case where the classification membership ... does not correctly match the known classification membership of the test data, tuning the fuzzy rule based on the classification error ... and in the case where the classification membership ... correctly matches the known classification ... applying a learning rule to update the membership function parameters  
20 such that the classification error is minimized ..." The Applicants submit that Claim 1 claims a useful, concrete and tangible result. Specifically, the useful, concrete and tangible result is the improvement in the generation of an on-line fuzzy inference network for the classification of data, where when there is no match, classification error is utilized to tune the fuzzy rule, and when there is a match the membership function parameters are  
25 updated to minimize the classification error. Thus, the Applicants submit that Claim 1 is directed toward statutory subject matter. Since Claims 2-9 are dependent on Claim 1, the Applicants submit that Claims 2-9 are also directed toward statutory subject matter.

The Applicants submit that an improved on-line fuzzy inference network is a useful, concrete and tangible result. Claims 1-10 and 19 are directed toward this  
30 improvement. Specifically, Claim 10 contains essentially the same language quoted

above from Claim 1; therefore, the same arguments presented for Claim 1 also apply to Claim 10.

Claim 19 claims, in part, an “improved training system” wherein a “rule tuning and learning application processor” is “operative for determining whether the firing strength of the fuzzy rule ... exceeds a predetermined threshold, and in the case where the firing strength does not exceed a certain threshold, determining whether the classification membership ... matches the known classification membership of the test data, in the case where the classification membership ... does not correctly match ... tuning the fuzzy rule based on the classification error, and in the case where the classification membership ... correctly matches ... applying a learning rule to update the membership function parameters.” The Applicants submit that Claim 19 claims a useful, concrete and tangible result. Specifically, the useful, concrete and tangible result is the improved training system where, when there is no match, classification error is utilized to tune the fuzzy rule, and when there is a match the membership function parameters are updated to minimize the classification error. Thus, the Applicants submit that Claim 19 is directed toward statutory subject matter.

Further, Applicants do not understand why the Examiner rejected Claim 19 as being directed toward non-statutory subject matter, while the Examiner did not reject Claim 11.

“An invention that has a practical application in the technological arts satisfies the utility requirement.” (Examination Guidelines for Computer-Related Inventions). Furthermore, “A practical application of a computer-related invention is statutory subject matter.” (id) As the present invention has practical application in the technological arts at least in as much as set forth above, the present invention is statutory. Therefore, the Applicants respectfully request that the rejection of Claims 1-10 and 19 under 35 USC 101 be withdrawn.

### **Claim rejections under 35 USC 102**

#### ***Claim 1***

In Section 3 of the Office Action (on page 3), the Examiner rejected Claims 1, 2, 10, 11, 12 and 19 under 35 USC 102(b) as being anticipated by Sirag, Jr. et al., (U.S.

Patent No. 5,252,789), herein referred to as the Sirag patent. Specifically, in reference to Claim 1, the Examiner stated that col. 5, lines 59-68 and col. 6, lines 1-26 of the Sirag patent anticipate a. storing a firing frequency count and incrementing the firing frequency count for each fuzzy rule, indicating the number of times the fuzzy rule has been fired.

5 The Examiner noted that a histogram defines a relationship between an “event” and the number of times the event occurred; the event is synonymous with a fuzzy rule and the number of times is synonymous with the firing frequency count. The Examiner also stated that col. 6, lines 29-35 of the Sirag patent anticipates determining whether the firing strength of the fuzzy rule having the greatest firing strength exceeds a

10 predetermined threshold. The Examiner noted that the firing strength is synonymous with frequency count. Further, the Examiner stated that col. 6, lines 36-68 of the Sirag patent anticipates when the firing strength of the fuzzy rule having the greatest firing strength exceeds the threshold, tuning the fuzzy rule based on the classification error.

The Examiner noted that the assigning of weight is associated with classification error.

15 In addition, the Examiner stated that col. 8, lines 4-6 of the Sirag patent anticipates when the firing strength of the fuzzy rule having the greatest firing strength does not exceed a certain threshold, determining whether the classification membership generated by the fuzzy rule having the greatest firing strength correctly matches the known classification membership of the test data. Further, the Examiner stated that col. 7, lines 37-47 and col.

20 8, lines 24-38 of the Sirag patent anticipates when the classification membership generated by the fuzzy rule having the greatest firing strength does not correctly match the known classification membership of the test data, tuning the fuzzy rule based on the classification error as in step c. Finally, the Examiner stated that col. 7, lines 37-47 and col. 6, lines 16-35 of the Sirag patent anticipates when the classification membership

25 generated by the fuzzy rule having the greatest firing strength correctly matches the known classification membership of the test data, applying a learning rule to update the membership function parameters such that the classification error is minimized for high-dimensional classification tasks. The Examiner noted that the substance of the preamble is anticipated by cols. 5 and 6 of Sirag.

30 “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” MPEP

2131 quoting *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). The Applicants respectfully submit that the cited references do not contain all of the elements claimed in Claim 1.

Clam 1 claims, in part, “determining whether the firing strength of the fuzzy rule having the greatest firing strength exceeds a predetermined threshold.” The Examiner has indicted that col. 6, lines 29-35 of the Sirag patent anticipates this element. The Examiner noted that the firing strength is synonymous with frequency count. The Applicants do not understand how the Examiner is interpreting col. 6, lines 29-35 of the Sirag patent to anticipate this element.

Col. 6, lines 29-35 of the Sirag patent state, referring to Fig. 3, “In fact, each plot has an abscissa of weight and an ordinate (not marked) of some normalized, dimensionless value, such as zero to one, which represent the relative likelihood that such number of passengers provide a weight signal of so many pounds. In a sense then, FIG. 3 is a table of twelve graphs, one per set, for sets relating to 0-11 passengers.” The Applicants respectfully submit that nowhere in col. 6, lines 29-35 is there any mention of a “predetermined threshold” or equivalent language. Thus, the Applicants respectfully request that the Examiner point out to the Applicants how he is interpreting col. 6, lines 29-35 to anticipate “determining whether the firing strength of the fuzzy rule having the greatest firing strength exceeds a predetermined threshold,” as is claimed in Claim 1. The Applicants assume that the Examiner believes that the constant PCMAX in col. 6, lines 44-45 anticipates a “predetermined threshold.”

Assuming that the Examiner is indicating that PCMAX in the Sirag patent is the same as “a predetermined threshold” as claimed in Claim 1, the Applicant is confused as to the remainder of the Examiner’s interpretation of the Sirag patent.

FIG. 4 of the Sirag patent is an illustration of the operation of the weight interpretation module 52. A description of FIG. 4 of the Sirag patent is presented in col. 6, lines 36-67. Starting at line 48, is the description of PC not being greater than PCMAX. Step d of Claim 1, claims in the case where the firing strength ... does not exceed the threshold ... i. in the case where the classification membership ... does not correctly match the known classification membership ... tuning the fuzzy rule based on the classification error ... and in the case where the classification membership ...

correctly matches the known classification membership ... applying a learning rule to update the membership function parameters ...” In contrast, the Sirag patent teaches, in col. 6, starting at line 47, “if PC is not greater than PCMAX, control passes from the test step 113 to a step 114 , where a term, taken from the fuzzy set OF(PC) stored in the  
5 observed weight data element 53, is added to the fuzzy set FW. After the step 114, is a step 115 where the PC variable is incremented. The steps 113-115 are repeatedly executed to develop a set, which for 600 pounds might be ...” The Applicants submit that the Sirag patent does not teach, disclose or suggest that after determining that that the firing strength does not exceed the threshold determining “where the classification  
10 membership ... does not correctly match the known classification membership ... tuning the fuzzy rule based on the classification error and where the classification membership ... correctly matches the known classification membership ... applying a learning rule to update the membership parameters.” In contrast, the Sirag patent teaches when the PC variable is not greater than PCMAX adding a data weight element to the fuzzy set and  
15 incrementing the PC variable. Therefore, the Applicants submit that the Sirag patent does not teach, disclose or suggest “where the classification membership ... does not correctly match the known classification membership ... tuning the fuzzy rule based on the classification error and where the classification membership ... correctly matches the known classification membership ... applying a learning rule to update the membership  
20 parameters,” as is claimed in Claim 1.

#### *Claims 2-9*

For the reasons presented above, Claim 1 is patentable over the art cited by the Examiner. As such, Claims 2-9 are also patentable over the cited prior art at least  
25 through their dependence upon an allowable base claim.

#### *Claims 10*

The same arguments presented above regarding Claim 1 can be applied to Claim 10. Therefore, the Applicants submit that Claim 10 is patentable over the cited prior art.  
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#### *Claims 11-18*

The same arguments presented above regarding Claim 1 can be applied to Claim 11. Therefore, the Applicants submit that Claim 11 is patentable over the cited prior art. Further, Claims 12-18 are also patentable over the cited prior art at least though their dependence upon an allowable base claim.

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*Claim 19*

The same arguments presented above regarding Claim 1 can be applied to Claim 19. Therefore, the Applicants submit that Claim 19 is patentable over the cited prior art.

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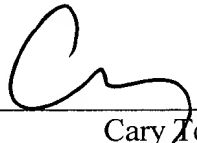
**Concluding Remarks:**

In view of the foregoing, it is respectfully submitted that all now pending claims 1-19 are in allowable condition. Reconsideration is respectfully requested. Accordingly, early allowance and issuance of this application is respectfully requested. Should the  
5 Examiner have any questions regarding this response or need any additional information, please contact the undersigned at (310) 589-8158.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 50-2691. In particular, if this response is not timely filed, the Commissioner is authorized to treat this response as  
10 including a petition to extend the time period pursuant to 37 CFR 1.136(a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 50-2691.

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Respectfully submitted,

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12/25/03  
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Date

  
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